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HEALTH EFFECTS DIVISION
SCIENTIFIC DATA REVIEWS
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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

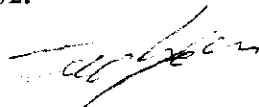
WASHINGTON, D.C. 20460


OFFICE OF
PREVENTION, PESTICIDES
AND TOXIC SUBSTANCES

March 6, 2006

MEMORANDUM

SUBJECT: **PCNB: HED Revision of golfer Risk Assessment DP Barcode
D 327362, Pc Code 056502.**

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This is a revision of the original golfer Exposure Assessment for PCNB, (S. Tadayon November 15, 2004 DP Barcode D291283). This revision has been done for the assessment of golfers using recently submitted golf course maintenance study data by Agricultural Re-entry Task Force (ARTF).

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Background

A Turf Transferable Residue (TTR) study (MRID# 44687101) was submitted in support of the re-registration of PCNB but, since there was no concurrent transfer coefficient measurement done in this study it was found to be not acceptable for golfer assessment. HED used a default TTR value of 5% of application rate and a transfer coefficient of 500 cm²/h to assess the golfer risk. This risk is presented in Table one. For the golfers the target MOE is 1000.

Table 1: Golfers assessment Using Residential SOP default values in November 2004

Activity	Application Rate (lb ai/acre)	TTR 5% of application rate	Transfer Coefficient (cm ² /hr)	Dermal Dose (mg/kg/day)	MOE (day 0)
golf course reentry: adult	32.67	18.3	500	0.523	575
	43.57	24.4	500	0.698	430

HED and SRRD met with registrant (S Korpalski of Chemtura) on June 23, 2005. HED agreed to use the golfer maintenance study which was being done by Agricultural Re-entry Task Force (ARTF). HED agreed to use the transfer coefficients from golf course maintenance workers for golfers which is by far a conservative estimate. The newly submitted ARTF data would also enable us to use the TTR study (MRID# 44687101) which shows a transferability of less than 1%.

Revised Golfer Assessment

A study titled "*Determination of Dermal and Inhalation Exposure to Reentry Workers During Maintenance Activities in Golf Courses*" (MRID# 467340-01;) was submitted to the agency by Agricultural Re-entry Task Force (ARTF). The purpose of this study was to estimate potential dermal and inhalation exposures and calculate dermal transfer coefficients among golf course workers re-entering a treated golf course to perform various golf course maintenance tasks. The tasks monitored included cup changing, greens mowing, greens watering, fairway mowing, irrigation repair, and miscellaneous grooming. Two trials were conducted at an 18-hole golf course near Hood River. The first trial was conducted on the first nineholes and the second trial was conducted on the back nine holes. In both trials, each greenway or fairway section was treated once with Daconil Weather Stik[®] Flowable Fungicide Turf Care[®] Turf and Ornamental Fungicide containing the active ingredient (ai) chlorothalonil. The soluble concentrate product was applied using commercial ground boom sprayers at a rate of approximately 5.5 lb ai/A. The application for the second trial took place two days after the application for the first trial. Exposures were monitored for each activity on one and two days after application. The potential dermal exposures were assessed by using whole-body dosimetry (inner and outer), hand washes, and face/neck wipes. The potential inhalation exposures were assessed by using personal air sampling pumps attached to OVS tubes. A total of three to four replicates per re-entry interval (trials 1 and 2 combined) were collected. For each replicate, the work period was approximately 1.5 to 4.5 hours long.

Transfer coefficients for potential and total dermal exposure were calculated.

Dermal transfer coefficients in cm^2/hr were calculated by dividing the corrected residue value (μg) by the replicate duration (hr) and by the worker-specific turf transferable residue value ($\mu\text{g}/\text{cm}^2$). The maintenance tasks were combined because many of the tasks may be performed by most of the workers.

Activity		
	Arithmetic Mean	Geometric Mean
Cup Changing	1,311	547
Greens Mowing	847	309
Greens Watering	3,291	1,390
Fairways Mowing	791	588
Miscellaneous Grooming	3,860	1,140
Irrigation Repair	10,534	1,750
All Tasks Combined	3,517	810

HED substituted the combined transfer coefficient from golf course maintenance study for golfers. This value (Arithmetic mean $3500 \text{ cm}^2/\text{h}$) is used since there is no chemical specific transfer coefficient for golfers playing on golf courses treated for PCNB, and is considered to be very conservative. The risk for golfers is presented in Table 2.

Table2: Golfer Risk, Using the Golf Course Maintenance Study Data (MRID #467340-01)

Activity	Application Rate (lb ai/acre)	TTR ug/cm2	Transfer Coefficient (cm^2/hr)	Dermal Dose (mg/kg/day)	MOE (day 0)
golf course reentry: adult	32.67	0.366	3500	0.073	4100
	43.57	0.488	3500	0.098	3100

The risk estimates for golfers using data from golfer maintenance study shows MOE's > 1000 which are not a concern.



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